

BASIS FOR THE AMENDMENT

Claims 1-40 are active in the present application. The claims have been amended for clarity. The amendment for clarity is not intended to change the scope of the claimed subject matter. Claims 37-40 are new claims. Support for new Claim 37 is found in the original claims. Support for new claims 38 and 39 is found in the original specification which describes a woven fabric of carbonaceous fibers. Applicants submit that the fibers of a woven fabric are inherently oriented and/or axially oriented. Further support is found in the drawings. Figures 1 and 2 show the claimed conductive sheet at high magnification. Applicants submit that it is readily recognized by those of skill in the art that the fiber structure of one embodiment of the claimed conductive sheet includes oriented fibers as evidenced by the lines present on the surface of the sheet and visible at high magnification. Support for new dependent Claim 40 is found on page 20, paragraphs 2 and 3. No new matter is believed to have been added by this amendment.

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Vo for the helpful and courteous discussion of December 19, 2003. During the discussion, Applicants' U.S. representative presented arguments that the carbonaceous-fiber sheet of the claimed invention includes carbonized fibers. Further, Applicants' U.S. representative noted that the prior art references were silent to a preferred bending resistance and do not recognize the criticality of this physical property in a carbonaceous-fiber sheet in applications where some pliability and modest stiffness is beneficial.

Claims 1-36 were rejected under 35 U.S.C. § 103(a) as obvious in view of patents to Suzuki (U.S. 5,439,746) and Muraki (U.S. 5,599,612). Applicants traverse the rejection on the grounds that neither Suzuki nor Muraki disclose carbonaceous-fiber sheets.

A carbonaceous fiber is produced by carbonizing a fiber such as a carbon-containing fiber (page 14, lines 19-21). One way that fibers can be carbonized is by heating from 900-1,400°C (page 30, lines 17-19). In one embodiment of the invention, Example 1, it is disclosed that a polyacrylonitrile-based long oxidized fiber is weaved into a fabric and this fabric is then heated to 900°C in a nitrogen stream to carry out carbonization and then heated to 2,000°C in an argon atmosphere to conduct graphitization. No such carbonization or graphitization is disclosed in Muraki or Suzuki. While Muraki and Suzuki may disclose fibers that are carbon-containing, fibers of the two prior art references do not disclose the carbonaceous-fiber sheet of the present invention.

Applicants submit that Muraki and Suzuki do not disclose or suggest at least one of the elements of the present independent claims and cannot therefore render the presently claimed invention obvious. Applicants respectfully request the withdrawal of the rejection in view of Muraki and Suzuki.

The Office rejected Claims 1-13, 14 and 30 under 35 U.S.C. § 102(b) as anticipated by, or under 35 U.S.C. § 103(a), as obvious over, a patent to Miwa (U.S. 4,851,304). Miwa discloses a “substrate for fuel cell . . . comprising short carbon fibers dispersed in random directions” and that the short fibers may be “chopped carbon fibers each of which has a length of from 3-20 mm”.

The Office has asserted that Miwa discloses a substrate that is of the same composition as the claimed carbonaceous-fiber sheet (e.g., the Office has asserted that carbon fibers of the prior art are produced by the same process as disclosed by Applicants). It appears that the Office has concluded that each of the physical properties recited in independent Claim 1 must inherently be present in the prior art substrate.

A non-woven fabric is relatively low in gas permeability, electrical conductivity and has a relatively high stiffness (page 18, lines 7-9). In Miwa, the resins which are present as a matrix around the dispersed carbon fibers are present in an amount effective to impart sufficient stiffness to the prior art substrate (column 8, lines 28-32). There is no disclosure in Miwa that indicates that the prior art substrate must have the properties recited in the present claims. Applicants submit that there is no evidence of record that Miwa must inherently meet the bending resistance limitation of present Claim 1.

The fact that Miwa nowhere discloses the bending resistance of the prior art substrates and nowhere appears to recognize the benefits of preparing a carbonaceous-fiber sheet that has the bending resistance of present Claim 1 may indicate that Miwa does not recognize the criticality of flexibility and pliability and may further indicate that the claimed bending resistance is not inherent to the prior art substrate.

Applicants submit that the presently claimed invention is not anticipated by Miwa as evidenced by Miwa’s silence with regards to bending resistance and the absence of any

evidence of record to indicate that the prior art substrate must inherently have the bending resistance presently claimed.

New dependent Claims 38 and 39 limit the claimed carbonaceous-fiber sheet of present Claim 1 to those sheets wherein the fibers are oriented and axially oriented, respectively. Applicants submit that new dependent Claims 38 and 39 are further patentable over Miwa because Miwa does not disclose oriented fibers and instead discloses chopped fibers that are randomly dispersed (see abstract).

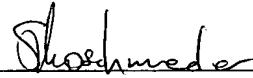
New dependent Claim 40 limits the fibers of Claim 1 to twisted yarns. Applicants submit that new dependent Claim 40 is further patentable over Miwa because Miwa requires the prior art substrate comprise chopped fibers and not the twisted fibers of new dependent Claim 40.

Applicants submitted a List of Related Cases in an Information Disclosure Statement filed with the Office on May 1, 2003. The Office has not indicated that the reference provided on the List has been considered in the examination of the above-identified application. Applicants respectfully request the Examiner acknowledge consideration of at least the claims and drawings of the copending application by returning a signed, dated and initialed copy of the List of Related Cases or providing a statement in the next communication from the Office indicating that at least the claims and drawings thereof have been considered.

Applicants submit the claims are now in condition for allowance as supported by the reasons given above and respectfully request the withdrawal of the rejections and the passage of all now-pending claims to Issue.

Respectfully submitted,

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